

Medical Emergencies Practice Standard

August 2021

Dental Council
Te Kaunihera Tiaki Niho

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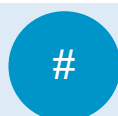
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Introduction

This introduction provides commentary on the medical emergencies practice standard and context for the standards and guidance within it. It does not form part of the practice standard.

The medical emergencies practice standard contains:

- The Council *standards* (the standards) for medical emergencies in dental practice that all registered oral health practitioners (practitioners) **must** meet. These are presented in the numbered coloured boxes -



The standards that practitioners must meet.

and

- *Guidance* which describes the actions and behaviour that enable practitioners to meet the minimum standards. If a practitioner does not follow the guidance, they must be able to demonstrate to the Council that they meet the standards.

This is presented in the grey-shaded boxes directly following the relevant standard -

Guidance

- The actions and behaviour that enable practitioners to meet the minimum standards.

For convenience, the standards are listed at the beginning of the practice standard; the standards with guidance follow.

Purpose

The purpose of the medical emergencies practice standard ('practice standard') is to set minimum standards for registered oral health practitioners to enable appropriate and effective management of a medical emergency in dental practice, within their training.

Practitioners' obligations

An oral health practitioner has an ethical and legal obligation to attend to a medical emergency. Further, it is the public's expectation that a health professional will be able to assist them in a medical emergency situation within their training and until an emergency response team arrives, when indicated.

The HDC Code of Rights provides that every consumer has the right to services provided with reasonable care and skill¹, and that comply with legal, professional, ethical, and other relevant standards².

¹ Right 4(1) Health and Disability Commissioner Code of Health and Disability Services Consumers' Rights Regulation 1996

² Right 4(2) Health and Disability Commissioner Code of Health and Disability Services Consumers' Rights Regulation 1996

The standards framework requires practitioners to put their patients' interests first, and to protect those interests by practising safely and providing good care. The practitioner's ability to deal with medical emergencies that arise in practice is a significant aspect of meeting their obligations to, and the expectations of, their patients.

Medical emergencies can and do occur in dental practice. The early and effective management of a medical emergency significantly improves outcomes and reduces the adverse effects of such an event. Oral health practitioners need to have appropriate skills, training and equipment available to manage potentially life threatening conditions; and know when to seek further medical emergency management support.

Oral health practitioners are expected to attend to a medical emergency within their level of competence, supported by their current resuscitation training at the level prescribed in the practice standard.

In an emergency situation instant decisions may have to be made and would be taken into account when deciding whether there had been a failure to meet the standards.

The requirements of this practice standard apply wherever scope of practice activities of a clinical nature are performed by a registered oral health practitioner. This includes preventive care and care delivered at "off-site" facilities such as mobile units, domiciliary care, or rest homes.

The New Zealand Resuscitation Council and ANZCOR

The New Zealand Resuscitation Council (NZRC) is the guideline and standard setting body for resuscitation in Aotearoa New Zealand. It combines with the Australian Resuscitation Council to publish ANZCOR (Australian and New Zealand Committee on Resuscitation) guidelines and algorithms.

These provide those involved in resuscitation education and practice with recommendations based on scientific evidence.

ANZCOR guidelines replace earlier New Zealand resuscitation guidelines and are endorsed by both councils. ANZCOR guidelines are informed by peer-reviewed international evidence and facilitate a standard approach to resuscitation best practice in Australia and New Zealand. ANZCOR guidelines and algorithms are available on the NZRC website³.

The NZRC provides graduated levels of resuscitation training. CORE Immediate has been developed as the foundation level of resuscitation training appropriate for New Zealand's health professionals. CORE Advanced is for the advanced rescuer who is expected to manage and supervise resuscitation events.

Non-registered staff

The Council strongly recommends that all non-registered staff are trained in Basic Life Support Skills, to better support other members of the dental team in the event of a medical emergency.

³ New Zealand Resuscitation Council <https://www.nzrc.org.nz/guidelines/>

Acknowledgements

The medical emergencies practice standard is founded on a number of different sources, including the New NZRC policy statements and ANZCOR guidelines, Health and Disability Services Consumers' Rights Regulation 1996, and the New Zealand Dental Association's code of practice Medical Emergencies in Dental Practice (2015).

The Council wishes to acknowledge the New Zealand Dental Association's earlier development of the 'Medical emergency situations: specific responses' and 'Emergency situations: quick reaction guide' in Appendices A and B of the practice standard, which have been updated to reflect current ANZCOR guidelines.

Medical emergencies practice standard

List of standards

There are eight standards in the medical emergencies practice standard; these are listed below. The standards with associated guidance follow.

1	You must ensure a concise and relevant medical history is included in the patient record of every patient, and updated regularly.
2	You must successfully complete the minimum level of resuscitation training prescribed for your profession every two years. <i>(refer page 7 for the details)</i>
3	You must have evidence available of the most recent resuscitation training you have completed.
4	You must ensure, if required to complete a Certificate of Resuscitation and Emergency Care (CORE) Immediate or equivalent course, that it contains the modules specified in the table below. <i>(refer page 8 for the details)</i>
5	<p>You must read Appendices A and B of this practice standard before attending a CORE Immediate or equivalent course.</p> <p>Appendix A: <i>Medical emergency situations: specific responses</i>, pg. 12</p> <p>Appendix B: <i>Emergency situations: quick reaction guide</i>, pg. 24</p>
6	You must have ready access to the equipment specified for your profession that is age appropriate for your practice and fully operational. <i>(refer page 9 for the details)</i>
7	You must have ready access to the medicine specified for your profession in dosages that are easy to administer, and are not beyond their expiry date. <i>(refer page 10 for the details)</i>
8	You must have written procedures for managing medical emergencies where the role of each staff member is clearly defined, and review these regularly as a team to ensure staff members know and understand their role.

Standards with guidance

1

You must ensure a concise and relevant medical history is included in the patient record of every patient, and updated regularly.

Guidance

- Understand that a clear and comprehensive medical history is fundamental in the prevention and management of a medical emergency.
- Include in the medical history: past medical history, current medical conditions, current medications (prescribed and non-prescribed), and allergies.
- Identify patients who have a severe medical condition/s or an increased risk of a medical problem arising during dental treatment.
- Consider whether additional precautions might be needed for you to provide safe care; or whether referral is required to a more suitably qualified practitioner or a more appropriate medical environment, such as a hospital-based dental practice.
- Update the medical history at each appointment (this may be done verbally) and document any changes in the patient record.

2

You must successfully complete the minimum level of resuscitation training prescribed for your profession every two years.

3

You must have evidence available of the most recent resuscitation training you have completed

Professions	Resuscitation Training Levels
Dentists/Dental Specialists - not performing sedation	CORE ⁴ Immediate or equivalent
Dentists/Dental Specialists performing sedation, with the exception of relative analgesia (RA)	NZRC CORE Advanced This course must include in the scenario training one or more scenarios relevant to the management of sedation-related complications
Dental Therapists, Dental Hygienists, Oral Health Therapists, Orthodontic Auxiliaries, Clinical Dental Technicians	CORE Immediate or equivalent
Dental Technicians undertaking restricted activities	CORE Immediate or equivalent
Dental Technicians not undertaking restricted activities	Basic Life Support Skills

International resuscitation training

Practitioners practising in Australia, who wish to practise in New Zealand, must have successfully completed one of the following courses (relevant to their practice) provided by an Australian Resuscitation Council accredited course centre:

- Courses equivalent to NZRC CORE Immediate: Advanced Life Support Level 1- Immediate Life Support(ALS1/ILS)
- Courses equivalent to NZRC CORE Advanced: Advanced Life Support Level 2- Advanced Life Support(ALS2/ALS)
- Courses for Basic Life Support Skills course by a credible provider.

The Australian resuscitation Council maintains the list of accredited course centres in Australia, and this can be accessed on their website⁵.

Practitioners practising in other overseas jurisdictions who wish to practise in New Zealand must have successfully completed resuscitation training with an accredited provider/course centre, where applicable. If providers/courses are not accredited or approved by their regulatory authority, the practitioner must have completed the relevant resuscitation training with a credible provider.

To be deemed equivalent to NZRC CORE Immediate, the course must contain the training modules specified in Standard 4 of the practice standard.

Australian and other overseas practitioners must have successfully completed the relevant resuscitation course no more than 20 months before starting practice in New Zealand.

⁴ Certificate of Resuscitation and Emergency Care

⁵ <https://resus.org.au/>

4

You must ensure, if required to complete a Certificate of Resuscitation and Emergency Care (CORE) Immediate or equivalent course, that it contains the modules specified in the table below.

5

You must read Appendices A and B of this practice standard before attending a CORE Immediate or equivalent course.

Appendix A: *Medical emergency situations: specific responses*, pg. 12

Appendix B: *Emergency situations: quick reaction guide*, pg. 24

Airway management	Adult collapse	Childhood collapse
		<i>Not required for clinical dental technicians and dental technicians⁶</i>
Manual airway opening	Adult collapse management plan	Childhood collapse management plan
Airway suction	Team scenario practice for adult collapse	Team scenario practice for childhood collapse
Oropharyngeal airway insertion	Use of Automatic External Defibrillation	Use of Automatic External Defibrillation
Mouth to mask ventilation	<i>Choking/ Airway obstruction</i>	<i>Choking/ Airway obstruction</i>
One person bag-mask ventilation	<i>Management of anaphylaxis</i>	<i>Management of anaphylaxis</i>
Two person bag-mask ventilation	<i>Acute coronary syndrome, Epileptic seizure, Faint (syncope)</i>	<i>Asthma</i>
Oxygen delivery	<i>Hyper/Hypoglycaemia, Hyperventilation, Maternal collapse</i>	

⁶ Due to the low prevalence of treating children

6

You must have ready access to the equipment specified for your profession that is age appropriate for your practice and fully operational.

Profession	Equipment
Dental Therapists, Dental Hygienists, Oral Health Therapists, Orthodontic Auxiliaries, Clinical Dental Technicians	<p>Oxygen cylinder, regulator and associated equipment suitable for delivering high flow oxygen</p> <p>Bag mask device with oxygen reservoir</p> <p>Basic airway adjuncts (oropharyngeal airways)</p>
Dental Therapists, Dental Hygienists and Oral Health Therapists, additionally	<p>Syringes and needles for drawing up and administering adrenaline</p>
Dentists/Dental Specialists	<p>Oxygen cylinder, regulator and associated equipment suitable for delivering high flow oxygen</p> <p>Bag mask device with oxygen reservoir</p> <p>Basic airway adjuncts (oropharyngeal airways)</p> <p>Syringes and needles for drawing up and administering medicines</p> <p>Spacer device to deliver Salbutamol</p>
Dentists/ Dental specialists performing ANY form of sedation, with the exception of relative analgesia (RA), additionally	<p>Advanced airway adjuncts - oropharyngeal and supraglottic airway devices</p> <p>Associated equipment for gaining and securing IV access and administering IV fluids and medication</p> <p>Automated external defibrillator (AED)</p>

7

You must have ready access to the medicine specified for your profession in dosages that are easy to administer, and are not beyond their expiry date.

Profession	Medicine
Orthodontic Auxiliaries, Clinical Dental Technicians	Oxygen
Dental Therapists, Dental Hygienists, and Oral Health Therapists (<i>a standing order must be in place with a dentist or dental specialist to enable administration of adrenaline for anaphylaxis</i>)	Oxygen Adrenaline (1:1,000)
Dentists/Dental Specialists	Oxygen Glyceryl trinitrate Aspirin Adrenaline (1:1,000) Salbutamol Glucose
Dentists/ Dental specialists performing ANY form of sedation, with the exception of relative analgesia (RA), additionally	Appropriate antagonist for sedative being administered, where required Dextrose 10% Glucagon Normal saline 100ml Hydrocortisone injection

Guidance for Standards 6 and 7

- Check the equipment at least 6 monthly to ensure it remains readily available and fully operational.
- Confirm that the location of the nearest automated external defibrillator (AED) is known by all staff members. This may be on-site or off-site. An AED is mandatory if sedation is provided, with the exception of relative analgesia (RA), refer to Standard 6. Early defibrillation of casualties who are in ventricular fibrillation/tachycardia dramatically improves prospects of survival.
- Store medicines to facilitate easy access and identification.
- Check the availability and expiry dates of medicines at least 6 monthly.
- In settings where there is a reliance on emergency response teams, such as hospitals and universities, factors such as accessibility to these emergency services and response time will determine the appropriate emergency equipment and medicines to be held at dental department level.

8

You must have written procedures for managing medical emergencies where the role of each staff member is clearly defined, and review these regularly as a team to ensure staff members know and understand their role.

Guidance

- Develop a team approach to the management of medical emergencies to ensure an appropriate and co-ordinated response.
- Hold a review of emergency procedures at least 6 monthly which involves all staff members. Discuss the practice's emergency procedures, including staff members' particular roles, specific response procedures and algorithms developed and/or adopted; and their continuing suitability for the practice.
- Consider incorporating role play or 'staging' of a medical emergency in the review, to give staff members the opportunity to practise their respective roles.
- Refresh team members' training in the use of emergency equipment, in their respective roles, as part of the review.
- Schedule appointments to ensure that two team members with the appropriate level of training are immediately available to assist in a medical emergency.

Medical emergency situations: specific responses

Anaphylaxis (See Appendix B for a Quick reaction guide)

Anaphylaxis is a severe potentially life threatening allergic reaction to AN ANTIGEN which often involves more than one body system. In the dental setting anaphylaxis may follow administration of a drug or contact with substances used during care. An anaphylactic reaction usually occurs within 20 minutes of exposure to the trigger, although onset may occur from minutes to hours following exposure.

Presentation: Anaphylaxis is characterised by rapidly developing airway and/or breathing and/or circulation problems, usually associated with swelling, redness or itching of the skin, eyes, nose, throat or mouth.

Anaphylaxis encompasses a variety of symptoms and signs which are highly variable, and may include one or more of the following:

- Difficult/noisy breathing
- Wheeze or persistent cough
- Swelling of face and tongue
- Swelling/tightness in throat
- Difficulty talking and/or hoarse voice
- Persistent dizziness/loss of consciousness and/or collapse
- Pale and floppy (young children)
- Abdominal pain and vomiting
- Hives, welts and body redness
- Low blood pressure, rapid pulse

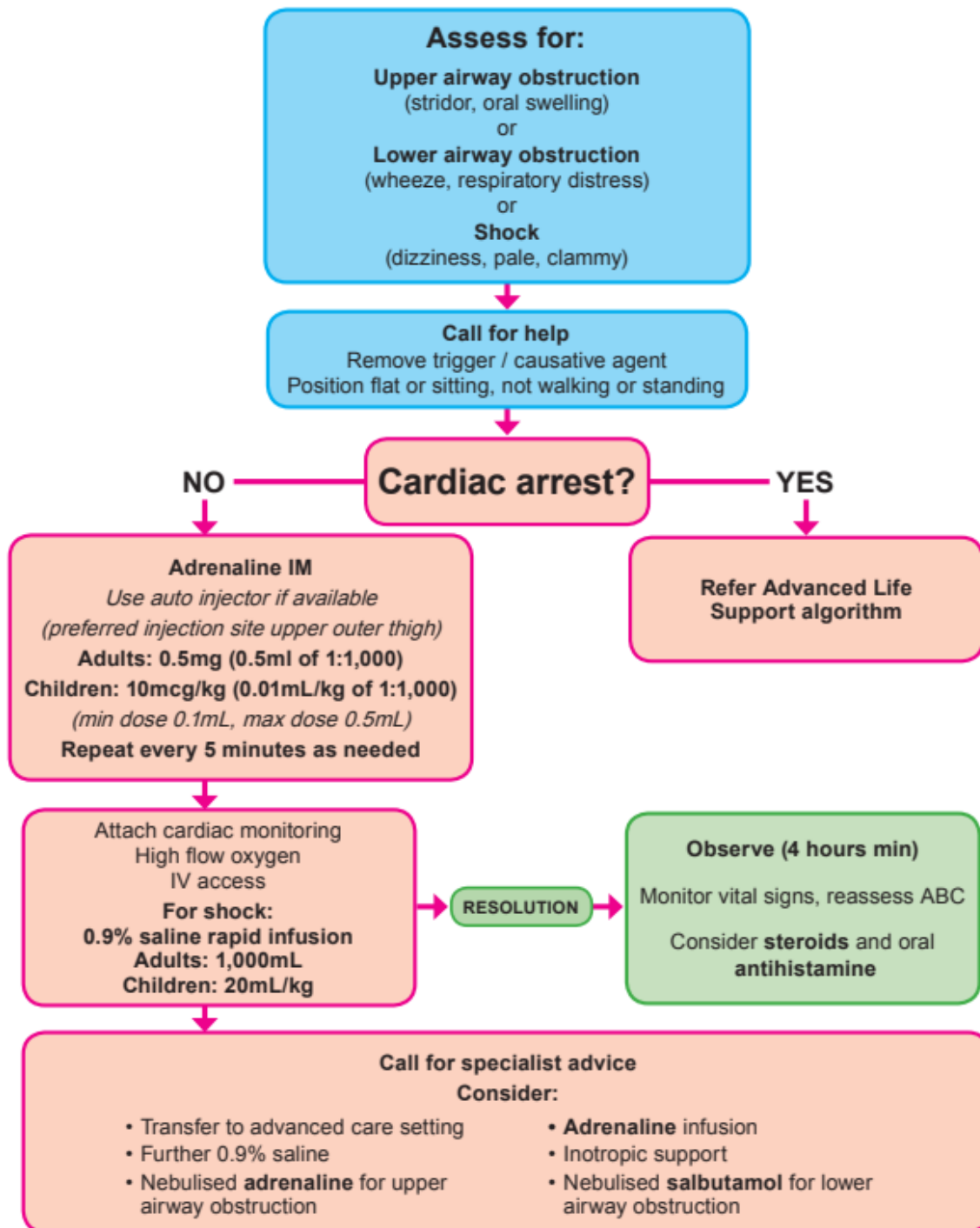
Symptoms may be severe, leading to collapse and cardiac arrest

Emergency management

If the patient's symptoms and signs suggest anaphylaxis follow these steps:

1. Prevent further exposure to triggering agent if possible
2. Lay the patient flat; do not stand them up or encourage them to walk. If breathing is difficult, allow to sit (if able).
3. Administer adrenaline via intramuscular (IM) injection (1:1,000) , preferably into lateral thigh:
 - Adults – 0.5mg (0.5mL)
 - Children (if weight is known) – 10mcg/kg (0.01mL/kg) (min dose 0.1mL, max dose 0.5mL)
 - Children if weight is unknown (1:1,000):
 - Infants less than 2 years – 0.1mL
 - Child 2-4 years – 0.2mL
 - Child 5 – 11 years – 0.3mL
 - 12 years and over – 0.5mL
4. Call an ambulance
5. Administer oxygen (rate of 8-10L/minute)
6. Give asthma medication for respiratory symptoms
7. If symptoms are not relieved within 5 minutes of the initial dose of adrenaline, give a 2nd dose
8. If the patient becomes unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart (Drs ABCD).

Anaphylaxis



January 2019



Dosage of IM Adrenaline for Anaphylaxis

Adrenaline 1:1000 dosage is 0.01 mL/kg
up to a maximum of 0.5mL

If the weight is unknown use the following:

AGE	DOSE
Infants less than 2 years	0.1mL
2-4 years	0.2mL
5-11 years	0.3mL
Over 12 years	0.5mL
Adult	0.5mL



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Acute coronary syndrome (unstable angina and myocardial infarction) (See Appendix B 'Cardiac conditions' for a Quick reaction guide)

Acute coronary syndrome (ACS) is a term used to describe a range of conditions associated with reduced blood flow to the heart⁷, including unstable angina (chest pain while doing very little or resting) and myocardial infarction (heart attack).

A person experiences ACS when there is a sudden partial or complete blockage of one of the coronary arteries that supply the heart muscle. As a result of the interruption to the blood supply, there is an immediate risk of life-threatening changes to the heart rhythm.

When the supply of oxygen to the cells of the heart muscle is too low, cells can die – the death of cells is a heart attack (myocardial infarction), and if not corrected quickly can result in serious, permanent heart muscle damage. When ACS doesn't result in cell death it is called unstable angina.

Heart attack is different from, but may lead to, cardiac arrest. Cardiac arrest is cessation of heart action.

Presentation

The signs and symptoms of ACS usually begin abruptly. The patient may experience one or a combination of the following:

- Chest pain or discomfort, often described as aching, pressure, tightness, or burning
- Pain spreading from the chest to the shoulders, arms, upper abdomen, back, neck or jaw
- Nausea or vomiting
- Indigestion
- Shortness of breath
- Sudden, heavy sweating
- Pale skin
- Lightheadedness, dizziness or fainting
- Unusual or unexplained fatigue
- Feeling restless or apprehensive

Chest pain or discomfort is the most common symptom. However the elderly, women, people with diabetes, Maori and Pacific Island people, and the Australian Indigenous people are more likely than others to have signs and symptoms without chest pain.

If the symptoms are severe, get worse quickly, or last longer than 10 minutes, call an ambulance.

Emergency management:

For patients who have previously been diagnosed with angina and who are experiencing **mild chest pain**:

- Administer 400 micrograms of glyceryl trinitrate (spray or tablet)
- If there is no (or only partial) resolution of symptoms within 5 minutes of the first dose, repeat the dose

⁷ <https://www.mayoclinic.org/diseases-conditions/acute-coronary-syndrome/symptoms-causes/syc-20352136>

If symptoms persist call an ambulance.

For patients who are undiagnosed for angina, or for patients who have been previously diagnosed with angina who have **severe symptoms**:

- Call an ambulance
- Position the patient for their comfort, keep warm, provide reassurance and support
- Administer glyceryl trinitrate 400 micrograms (spray or tablet)
- Administer aspirin 300 mg orally (dissolvable aspirin preferred) - only withhold if the patient is known to be anaphylactic to aspirin
- Administer oxygen (8-10L per minute) ONLY if the patient is cyanosed, or there are obvious signs of shortness of breath

If practical and resources allow, locate the closest AED and bring it to the patient.

If the patient becomes unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart (Drs ABCD).

Asthma (See Appendix B for a Quick reaction guide)

Asthma is a chronic inflammatory disease of the airways which is characterised by sensitive airways that narrow in response to certain 'triggers', leading to difficulty in breathing.

Presentation:

The patient will usually have a history of asthma. Asthma can be recognised by the following symptoms and signs:

- Rapid breathing (greater than 25 breaths per minute)
- Chest tightness
- Shortness of breath (unable to complete a sentence in a single breath)
- Wheeze (high pitched whistling sound during breathing)
- Symptoms and signs of a severe asthma attack include some or all of the following:
- Gasping for breath
- Severe chest tightness
- Inability to speak more than one or two words per breath
- Feeling distressed and anxious
- Little or no improvement after using "reliever" medication
- 'Sucking in' of the throat and rib muscles, use of shoulder muscles or bracing with arms to help breathing
- Blue discolouration around the lips (can be hard to see if skin colour also changes)
- Pale and sweaty skin

As well as the above symptoms, young children may appear restless, unable to settle, or become drowsy. A child may also 'suck in' muscles around the ribs, have severe coughing, or vomiting.

Emergency management:

If the patient is experiencing a mild asthma attack follow these steps:

- Sit the patient comfortably upright. Be calm and reassuring. Do not leave the patient alone.
- Without delay give the patient 6 separate puffs of a "reliever" (salbutamol, marketed as Ventolin). The medication is best given one puff at a time via a spacer device. Ask the patient to take 6 breaths from the spacer after each puff of medication. Use the patient's inhaler if possible.
- Wait 6 minutes. If there is little or no improvement give another 6 puffs.
- If there is still no improvement, call an ambulance immediately. Keep giving 6 puffs every 6 minutes until the ambulance arrives
- Administer oxygen (8-10L per minute)

If the patient has any signs of a severe asthma attack call an ambulance straight away and follow the steps above while waiting for the ambulance to arrive.

If the patient becomes unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart (Drs ABCD).

If a severe allergic reaction is suspected, follow guidelines for Anaphylaxis.

Choking and aspiration (See Appendix B for a Quick reaction guide)

Presentation depends on the severity of the obstruction and can be classified as 'Effective cough' or 'Ineffective cough':

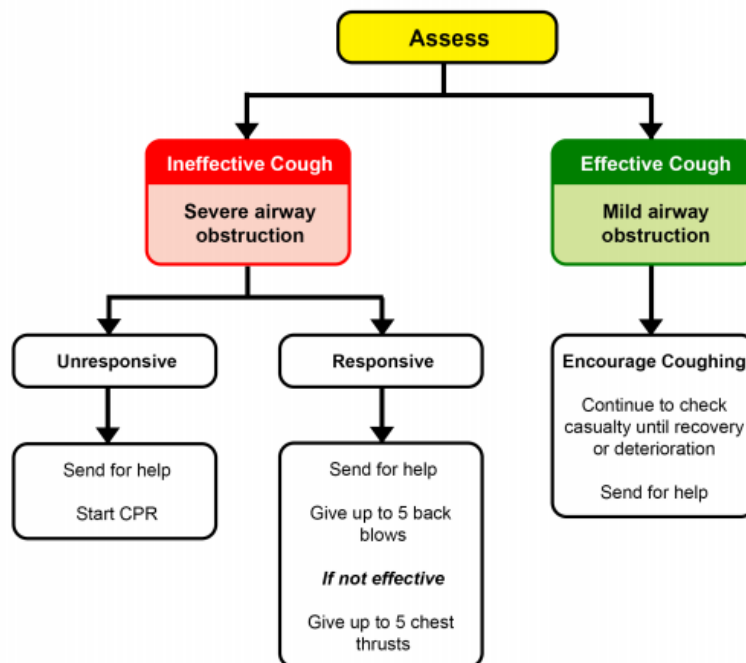
Effective cough (Mild airway obstruction):	Ineffective cough (Severe airway obstruction):
The patient can breathe, cough effectively and speak	Patient unable to breathe or speak/vocalise
Children are fully responsive, crying or verbally respond to questions, may have a loud cough (and able to take a breath before coughing)	Attempts at coughing are quiet or silent
	Cyanosis and diminishing level of consciousness (particularly in children)
	Patient unconscious

Emergency management for ADULTS and CHILDREN over 1 year of age:

Effective cough (Mild airway obstruction):	Ineffective cough (Severe airway obstruction) in a conscious patient:
Encourage the patient to continue coughing, do nothing else except monitor for deterioration.	Stand to the side and slightly behind the patient, support the chest with one hand and lean the patient well forwards (head down)
Call an ambulance if obstruction not relieved	Give up to 5 sharp back blows between the shoulder blades with the heel of your hand (checking after each if the obstruction has been relieved)
	If unsuccessful give up to 5 chest thrusts – stand behind the victim, put both arms around the chest, identify the same compression point as for chest compressions (in CPR), clench one fist, grasp it with the other hand and pull sharply inwards
	Continue alternating up to 5 back blows and up to 5 chest thrusts until successful or the patient becomes unconscious
	In an unconscious patient:
	Lower the patient to the floor

	<p>Call an ambulance immediately</p> <p>Begin resuscitation (Drs ABCD)</p>
<p>If there is uncertainty regarding a possible aspiration or not, refer the patient promptly for further investigations</p>	

Foreign Body Airway Obstruction (Choking)



January 2016



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Diabetic emergency

See hypoglycaemia and hyperglycaemia. **Assume any diabetic patient with impaired consciousness has hypoglycaemia until proven otherwise.**

Epileptic seizure (See Appendix B for a Quick reaction guide)

Epilepsy is a disease characterised by an enduring predisposition to epileptic seizures⁸. A seizure may occur when the normal pattern of electrical activity in the brain is disrupted. Seizures vary greatly and most are over in less than 5 minutes.

Not all seizures are considered epileptic seizures. Seizures can also be a sign of other conditions (as listed below) and these should be considered even in known epileptics:

- In the early stages of cardiac arrest
- As a symptom of hypoglycaemia
- As a symptom of a faint (through a drop in blood pressure and transient cerebral hypoxia)

Presentation:

Seizure activity may take many forms and symptoms may include:

- Sudden muscle spasm producing rigidity
- Jerking movements of the head, arms and legs
- Shallow breathing, or breathing may stop temporarily
- Dribbling from the mouth; the tongue may be bitten leading to bleeding
- Urinary incontinence
- Changes in conscious state from being fully alert to confused, drowsy, or loss of consciousness

Emergency management:

If the patient is unconscious and actively seizing:

- Follow the patient's seizure management plan, if there is one
- Manage as for any unconscious patient (prioritise maintaining the airway)
- Remove the patient from danger or remove any harmful objects which might cause secondary injury
- Note the time the seizure starts
- Protect the head
- Do not attempt to restrain the patient, or place anything between their teeth
- Lay the patient down and turn them on their side when practical
- Maintain an airway
- Reassure the patient who may be dazed, confused or drowsy
- Administer oxygen (8-10L per minute)
- Call an ambulance
- Actively monitor and support the patient

If the patient is unresponsive and not breathing normally, follow the Basic Life Support Flowchart (Drs ABCD).

⁸ <https://www.epilepsy.com/article/2014/4/revised-definition-epilepsy>

Faint (Syncope) (See Appendix B for a Quick reaction guide)

'Faint' is defined as a transient loss of consciousness due to inadequate cerebral oxygenation (perfusion).

Presentation Feeling of light headedness or dizziness, pallor, 'cold sweat', slowing of pulse, low blood pressure, nausea and vomiting, loss of consciousness.

Emergency management:

- Lay the patient down flat and elevate the legs
- Loosen tight clothing around the neck
- Administer oxygen (8-10 L per minute)
- Reassure the patient when they regain consciousness.

If the patient does not regain consciousness promptly commence resuscitation following the Basic Life Support Flowchart (Drs ABCD).

Hypoglycaemia (See Appendix B for a Quick reaction guide)

Hypoglycaemia occurs when the level of glucose in the blood falls well below normal. Immediate treatment of hypoglycaemia is considered necessary when the blood glucose level is at or below 3.9 millimoles per litre (mmol/L).

People with diabetes may develop low blood glucose as a result of:

- too much insulin or other blood glucose lowering medication
- inadequate or delayed carbohydrate intake after their usual insulin or oral medication dose
- exercise without adequate carbohydrate intake, or delayed intake
- when ill; or
- excessive alcohol intake

Presentation:

When blood glucose levels fall below normal levels signs and symptoms may include:

- Sweating
- Pale skin, especially in young children
- A rapid pulse
- Shaking, trembling or weakness
- Hunger
- Light headedness or dizziness
- Headache
- Mood or behavioural changes, confusion, inability to concentrate
- Slurred speech
- Being unable to follow instructions
- Unresponsive
- Fever

Emergency management:

If a patient with diabetes has a diabetes management plan, then follow that plan.

If a patient has no management plan and has symptoms or signs of hypoglycaemia:

- Encourage patient to rest
- If the patient is able to follow simple commands and swallow safely, administer 15-20 grams of glucose tablets (4-5 x 4 gram glucose tablets)

If glucose tablets are not available, administer:

- Sugary drinks , sugar-sweetened beverages or fruit juice (approximately 200mL)
- Honey or sugar (3 teaspoons)

- Glucose gels (15g of glucose gel)
- Monitor for improvement – resolution of symptoms would be expected within 15 minutes

If signs and symptoms persist after 15 minutes and the patient is still able to follow simple commands and swallow safely, administer a further 4 X 4g of glucose tablets, or an alternative as listed above.

Once recovered, recommend the patient has a snack with longer acting carbohydrate, for example:

- A slice of bread
- A glass of milk
- A piece of fruit
- 2-3 pieces dried fruit
- A snack size tub of yoghurt (not diet or 'sugar free')
- Arrange for someone to accompany the patient home (the patient should not drive).

If the patient deteriorates, does not improve with treatment, is seizing or is unconscious, call for an ambulance.

If the patient is unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart (Drs ABCD).

If the patient is unconscious but breathing, lay them on their side and ensure the airway is clear.

In the case of a severe hypoglycaemic event, when the patient is unconscious or seizing, and/or is unable to swallow safely, give Glucagon if trained to do so:

- 1mg for adults and children over 8 years who weight more than 25kg
- 0.5mg for children under 8 years or weighing less than 25kg

Hyperglycaemia

Hyperglycaemia means having a blood glucose level higher than normal. Common causes of hyperglycaemia include inadequate levels of insulin or incorrect doses of diabetes tablet medications, infections, excess carbohydrate intake, and stressful situations.

Presentation:

When blood glucose levels remain above normal levels, symptoms and signs may include:

- Excessive thirst
- Frequent urination
- Dry skin and mouth, with sunken eyes (signs of dehydration)
- Recent weight loss
- Rapid pulse
- Nausea and vomiting
- Abdominal pain
- Rapid breathing
- Fruity sweet smell of acetone on the breath
- Confusion, a deteriorating level of consciousness, or unresponsiveness

Emergency management:

If a patient with diabetes has a diabetes management plan then follow that plan. If a patient has no management plan and has signs or symptoms of hyperglycaemia, refer for assessment by a healthcare professional.

If the patient is unresponsive and not breathing normally:

- Call an ambulance
- Commence resuscitation following the Basic Life Support Flowchart (DRs ABCD)

If the patient is unconscious but breathing, lay the patient on their side and ensure the airway is clear.

Hyperventilation (anxiety associated) *(See Appendix B for a Quick Reaction Guide)*

Hyperventilation is a state of prolonged rapid breathing resulting in a fall in arterial carbon dioxide leading to acute respiratory alkalosis, and potentially cerebral vasoconstriction and loss of consciousness. Rapid breathing can indicate more serious illness (e.g. acute myocardial infarction, pulmonary embolism etc.), therefore it is essential that an accurate diagnosis as to the cause of the rapid breathing is made and this may require medical assistance.

Presentation:

- Tingling feeling in the fingertips or lips
- Involuntary muscle spasms in the hands and feet
- Dizziness lightheadedness
- Shortness of breath
- Loss of consciousness.

Emergency management:

Reassure and calm the patient.

For conscious patients with clinical signs of or actual low oxygen saturations administer oxygen at 8-10 litres per minute delivered via a mask and reservoir bag.

If the patient loses consciousness commence resuscitation by following the Basic Life Support Flowchart (Drs ABCD).

Maternal collapse⁹

When the patient is unresponsive and not breathing normally commence resuscitation immediately following the Basic Life Support Flowchart (Drs ABCD).

Once CPR is in progress, if sufficient resources are available, place padding such as a towel, cushion, or similar object under the right hip to tilt the woman's hips (approximately 15-30 degrees) to the left but leave her shoulders flat to enable good quality compressions. The reason for this position in pregnant women is to move the weight of the pregnant uterus off of her major blood vessels in the abdomen.

If a tilted position is not possible, or it compromises the quality of the compressions, then perform chest compressions with the woman on her back.



⁹ <https://www.nzrc.org.nz/assets/Guidelines/BLS/All-BLS-Guidelines-Aug-2016.pdf>

Emergency situations – Quick reaction guide

Anaphylaxis

- Prevent further exposure to triggering agent if possible
- Lay the patient flat
- Administer adrenaline via intramuscular (IM) injection (1:1,000), preferably into lateral thigh:
 - Adults – 0.5mg (0.5mL)
 - Children (if weight is known) – 10mcg/kg (0.01mL/kg) (min dose 0.1mL, max dose 0.5mL)
 - Children if weight is unknown (1:1,000):
 - Infants less than 2 years – 0.1mL
 - Child 2-4 years – 0.2mL
 - Child 5 – 11 years – 0.3mL
 - 12 years and over – 0.5mL
- Call an ambulance
- Administer oxygen (rate of 8-10L/minute)
- Give asthma medication for respiratory symptoms

If symptoms are not relieved within 5 minutes of the initial dose of adrenaline, give a 2nd dose.

If the patient becomes unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart (Drs ABCD).

Asthma

Sit the patient comfortably upright. Be calm and reassuring. Do not leave the patient alone.

Without delay give the patient 6 separate puffs of a “reliever” (salbutamol, marketed as Ventolin). The medication is best given one puff at a time via a spacer device. Ask the patient to take 6 breaths from the spacer after each puff of medication. Use the patient’s inhaler if possible.

Wait 6 minutes. If there is little or no improvement give another 6 puffs.

If there is still no improvement, call an ambulance immediately. Keep giving 6 puffs every 6 minutes until the ambulance arrives.

Administer oxygen (8-10L per minute).

If the patient has any signs of a severe asthma attack call an ambulance straight away and follow the steps above while waiting for the ambulance to arrive.

If the patient becomes unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart (DRs ABCD).

If a severe allergic reaction is suspected, follow guidelines for Anaphylaxis.

Cardiac conditions

For patients who are experiencing **mild chest pain**:

- Administer 400 micrograms of glyceryl trinitrate (spray or tablet)
- If there is no (or only partial) resolution of symptoms within 5 minutes of the first dose, repeat the dose

If symptoms persist call an ambulance.

For patients who have **severe symptoms**:

- Call an ambulance
- Position the patient for their comfort, keep warm, provide reassurance and support
- Administer glyceryl trinitrate 400 micrograms (spray or tablet)
- Administer aspirin 300 mg orally (dissolvable aspirin preferred) - only withhold if the patient is known to be anaphylactic to aspirin
- Administer oxygen (8-10L per minute) ONLY if the patient is cyanosed, or there are obvious signs of shortness of breath

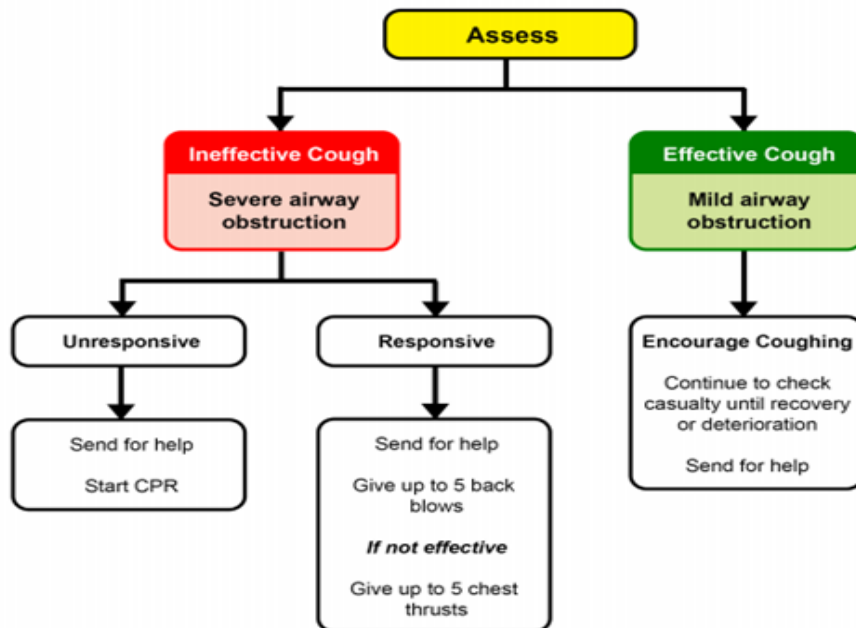
If practical and resources allow, locate the closest AED and bring it to the patient.

If the patient becomes unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart (Drs ABCD).

Choking and aspiration

Emergency management for ADULTS and CHILDREN over 1 year of age:

Foreign Body Airway Obstruction (Choking)



Epileptic seizure

If the patient is unconscious and actively seizing:

- Follow the patient's seizure management plan, if there is one
- Remove the patient from danger or remove any harmful objects which might cause secondary injury
- Note the time the seizure starts
- Protect the head
- Do not attempt to restrain the patient, or place anything between their teeth
- Lay the patient down and turn them on their side when practical (recovery position)
- Maintain an airway (head tilt)
- Reassure the patient who may be dazed, confused or drowsy
- Administer oxygen (8-10L per minute)
- Call an ambulance
- Actively monitor and support the patient

If the patient is unresponsive and not breathing normally, follow the Basic Life Support Flowchart (Drs ABCD).

Note: Even in a known epileptic, consider other conditions which may cause seizure:

- the early stages of cardiac arrest
- as a symptom of hypoglycaemia
- as a symptom of a faint (through a drop in blood pressure and transient cerebral hypoxia) – which tends to be short in duration.

Faint (Syncope)

- Lay the patient down flat and elevate the legs
- Loosen tight clothing around the neck
- Administer oxygen (8-10 L per minute)
- Reassure the patient when they regain consciousness

If the patient does not regain consciousness promptly commence resuscitation following the Basic Life Support Flowchart (Drs ABCD).

Hypoglycaemia

Encourage the patient to rest.

If the patient is able to follow simple commands and swallow safely, administer 15-20 grams of glucose tablets (4-5 x 4 gram glucose tablets).

If glucose tablets are not available, administer:

- Sugary drinks , sugar-sweetened beverages or fruit juice (approximately 200mL)
- Honey or sugar (3 teaspoons)
- Glucose gels (15g of glucose gel)

Monitor for improvement – resolution of symptoms would be expected within 15 minutes.

If signs and symptoms persist after 15 minutes and the patient is still able to follow simple commands and swallow safely, administer a further 4 X 4g of glucose tablets, or an alternative as listed above.

Once recovered, recommend the patient has a snack with longer acting carbohydrate, for example:

- A slice of bread
- A glass of milk
- A piece of fruit
- 2-3 pieces dried fruit
- A snack size tub of yoghurt (not diet or 'sugar free')

Arrange for someone to accompany the patient home (the patient should not drive).

If the patient deteriorates, does not improve with treatment, is seizing or is unconscious, call for an ambulance.

If the patient is unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart (Drs ABCD).

If the patient is unconscious but breathing, lay them on their side and ensure the airway is clear.

In the case of a severe hypoglycaemic event, when the patient is unconscious or seizing, and/or is unable to swallow safely, give Glucagon if trained to do so:

- 1mg for adults and children over 8 years who weight more than 25kg
- 0.5mg for children under 8 years or weighing less than 25kg

Hyperventilation (anxiety associated)

Reassure and calm the patient.

For conscious patients with clinical signs of or actual low oxygen saturations administer oxygen at 8-10 litres per minute delivered via a mask and reservoir bag.

If the patient loses consciousness commence resuscitation by following the Basic Life Support Flowchart (Drs ABCD).

Basic Life Support

D

Dangers?

R

Responsive?

S

Send for help

A

Open Airway

B

Normal Breathing?

C

Start CPR

30 compressions : 2 breaths

D

Attach Defibrillator (AED)

as soon as available, follow prompts

**Continue CPR until responsiveness or
normal breathing return**



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**NEW ZEALAND
Resuscitation Council**
WHAKAHAUORA AOTEAROA